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Department of
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November 21, 2006

Federal Communications Commission
Washington, DC, 20554

Re: Investigation of the Spectrum Requirements for Advanced Medical Technologies ET Docket No. 06-135

Dear Sirs,

I have had the opportunity to read a communication sent to you by the Alfred Mann Foundation on October 31, 2006. In that document they request a revised allocation of specific wideband frequencies for the purpose of controlling and driving a new class of medical devices: wireless medical implants.

While I am not an expert on the technical engineering required to control and coordinate the proposed wireless medical implants, **I am an expert in rehabilitation** following damage to the central and peripheral nervous systems, and also **an expert on the use of electrical stimulation** to ameliorate the dysfunction which follows such damage. I have spent the past three years investigating the effectiveness of implanted microstimulators for reducing various impairments in individuals who have survived a stroke. The microstimulators I have been evaluating have required the direct drive of an RF coil near the site of stimulation. The proposed wideband communication system represents a tremendous step up from the present system.

In order for stimulation to become truly 'functional', individuals who use the systems must be free to move about their environment, all the while receiving critically timed stimulated activation of key muscle groups. That has not been possible to date, since the present systems require the immediate proximity of the RF coil, which in turn is plugged into a 'personal trainer' which is, at present, plugged into the wall. This system needlessly tethers our participants exclusively to exercise by stimulation, and precludes the true 'functional' nature of the intended programs. The proposed next generation of communications will provide both clinicians and users a tremendous step forward to maximize the effects of electrical control of paralyzed muscles.

At present the use of fully implanted microstimulators has been largely limited to individuals who have suffered damage to the central nervous system. While many individuals, both young and old, are affected by nervous system dysfunction and limited in their daily activities because of weakness and joint tightness, the number is comparatively small when contrasted with people who experience joint limitations from arthritis and the concomitant pain and weakness.

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One study using microstimulators provided preliminary evidence of the effectiveness of electrical stimulation in delaying or even avoiding the expensive and painful process of total knee surgery because of osteoarthritis. We anticipate, and hope to demonstrate in a presently submitted grant, that the use of electrical stimulation for arthritis sufferers will significantly impact the strength of key muscle groups and potentially reduce the number of surgeries required to address this problem, which is pervasive in the older generations. Success at the knee will drive further evaluations of other joints commonly affected by arthritis, such as the hip, and possibly the shoulder and elbow as well. The applications of implanted microstimulation could reach into the millions over the next decade or two, as the graying of America continues and the technology of wideband control of wireless implanted microstimulators further develops. This is a most exciting marriage of scientific technology and clinical need, combined at the optimal time to potentially reduce medically, economically and socially costly disabilities.

I trust that the Federal Communication Commission will adopt service and technical rules to accommodate this very exciting, and potentially hugely beneficial, new wireless wideband implanted medical device, the microstimulator. Thank you for your consideration.

Sincerely

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